Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Claim 1 (currently amended): A method of transcoding between a first compression codec and a second compression codec, said first and second codecs being of pulse type and using multipulse dictionaries in which each pulse has a position marked by an associated index, ~~which~~ wherein the method ~~is characterized in that it includes~~ comprises the ~~following~~ steps:

a) where appropriate, adapting coding parameters between said first and second codecs;

b) obtaining from the first codec a selected number [[(N_e)]] of pulse positions and respective position indices [[(e_i)]] associated therewith;

c) for each current pulse position of given index, forming a group of pulse positions including at least the current pulse position and the pulse positions with associated indices immediately below and immediately above the given index;

d) selecting as a function of pulse positions [[(T_j)]] accepted by the second codec at least some of the pulse positions in an ensemble [[(P_s)]] constituted by a union of said groups formed in step c); and

e) sending the selected pulse positions to the second codec for coding/decoding from the positions sent; said selection step d) then involving a number of pulse positions less than the total number of pulse positions in the dictionary of the second codec.

Claim 2 (currently amended): A method according to claim 1, ~~wherein~~ the first codec ~~(E)~~ ~~uses~~ using a first number of pulses in a first coding format, and ~~characterized in that~~ said selected number [[(N_e)]] in step b) corresponds to said first number of pulse positions.

Claim 3 (currently amended): A method according to claim 2~~, wherein~~:

· the first codec ~~(E) uses~~ using a first number [[(N_e)]] of pulse positions in a first coding format; and

· the second ~~codec (E) uses~~ using a second number [[(N_s)]] of pulse positions in a second coding format;

~~and characterized in that it~~ wherein the method further includes a step of discriminating between the following situations:

· the first number [[(N_e)]] is greater than or equal to the second number [[(N_s)]]; and

· the first number [[(N_e)]] is less than the second number [[(N_s)]].

Claim 4 (currently amended): A method according to claim 3, wherein the first number [[(N_e)]] is greater than or equal to the second number, ~~(N_s) ($N_e \geq N_s$)~~ and ~~characterized in that~~ each group formed in step c) includes right-hand neighbor pulse positions ~~(v^i_d)~~ and left-hand neighbor pulse positions ~~(v^i_g)~~ of said current pulse position of given index and the respective numbers of left-hand and right-hand neighbor pulse positions are selected as a function of a complexity/transcoding quality trade-off.

Claim 5 (currently amended): A method according to claim 4, ~~characterized in that~~ wherein there is constructed in step d) a subdirectory of combinations of pulse positions resulting from intersections [[(S_j)]] of:

· an ensemble [[(P_s)]] constituted by a union of said groups formed in step c); and

· pulse positions [[(T_j)]] accepted by the second codec,

so that said subdirectory has a size less than the number of pulse position [[(T_j)]] combinations accepted by the second codec.

Claim 6 (currently amended): A method according to claim 5, ~~characterized in that~~ wherein, after step e), said subdirectory is searched for an optimum set of positions including said second number [[(N_s)]] of positions at the level of the second coder [[(S)]].

Claim 7 (currently amended): A method according to claim 6, ~~characterized in that~~ wherein the step of searching for the optimum set of positions is effected by means of a focused search to accelerate the exploration of said subdirectory.

Claim 8 (currently amended): A method according to ~~any one of the preceding claims~~ claim 1, wherein said first codec is adapted to deliver a succession of coded frames and

~~characterized in that~~ the respective numbers of pulse positions in the groups formed in step c) are selected successively from one frame to the other.

Claim 9 (currently amended): A method according to claim 3, wherein:

- the first number [[(N_e)]] is less than the second number ~~(N_s) (N_e<N_s) and characterized in that~~,

- a further test is effected to determine if the pulse positions provided in the second number [[(N_s)]] of pulse positions are included in the pulse positions of the groups formed in step c), and,

- in the event of a negative result of said test, the number of pulse positions in the groups formed in step c) is increased.

Claim 10 (currently amended): A method according to claim 3, ~~characterized in that~~ wherein it further discriminates the situation in which the second number N_s is between the first number N_e and twice the first number N_e (N_e<N_s<$2N_e$) and if so:
c1) the N_e pulse positions are selected from the outset; and
c2) there is further selected a complementary number of pulse positions N_s - N_e defined in the immediate neighborhood of the pulse positions selected in step c1).

Claim 11 (currently amended): A method according to ~~any one of the preceding claims~~ claim 1, wherein:

- said first codec ~~operates~~ operating with a given first sampling frequency and from a given first subframe duration, ~~and characterized in that~~ said coding parameters for which said adaptation is carried out in step a) include a subframe duration and a sampling frequency, and

- said second codec ~~operates~~ operating with a second sampling frequency and a second subframe duration, and ~~characterized in that~~ the following four situations are distinguished in step a):

· the first and second durations are equal and the first and second frequencies are equal;

· the first and second durations are equal and the first and second frequencies are different;

· the first and second durations are different and the first and second frequencies are equal; and

· the first and second durations are different and the first and second frequencies are different.

Claim 12 (currently amended): A method according to claim 11, wherein the first and second durations are equal and the first and second sampling frequencies are different, and ~~characterized in that it~~ wherein the method includes steps of:

a1) direct time scale quantization from the first frequency to the second frequency; and

a2) determination as a function of said quantization of each pulse position in a subframe with the second coding format characterized by the second sampling frequency from a pulse position in a subframe with the first coding format characterized by the first sampling frequency.

Claim 13 (currently amended): A method according to claim 12, ~~characterized in that~~ wherein the quantization step a1) is effected by calculation and/or tabulation on the basis of a function which at a pulse position in a subframe with the first format [[(p_e)]] establishes the correspondence of a pulse position in a subframe with the second format [[(p_s)]], said function substantially taking the form of a linear combination involving a multiplier coefficient corresponding to the ratio of the second sampling frequency to the first sampling frequency.

Claim 14 (currently amended): A method according to claim 13, ~~characterized in that~~ wherein, to pass conversely a pulse position in a subframe with the second format [[(p_s)]] to a pulse position in a subframe with the first format, [[(p_e)]] there is applied an inverse function to said linear combination applied to a pulse position in a subframe with the second format [[(p_s)]].

Claim 15 (currently amended): A method according to claim 11, wherein the first and second durations are equal and the first and second sampling frequencies are different, and ~~characterized in that it includes~~ wherein the method comprises the steps of:

a'1) oversampling a subframe with the first coding format characterized by the first sampling frequency at a frequency equal to the lowest common multiple of the first and second sampling frequencies; and
a'2) applying to the oversampled subframe low-pass filtering followed by undersampling to obtain a sampling frequency corresponding to the second sampling frequency.

Claim 16 (currently amended): A method according to claim 15, ~~characterized in that~~ wherein the method continues by obtaining, ~~a number of positions~~ by means of a thresholding method, a number of positions which can be variable where appropriate ~~a variable number of positions~~.

Claim 17 (currently amended): A method according to claim 12, ~~characterized in that~~ wherein it further includes a step of establishing the correspondence for each position [[(p_e)]] of a pulse of a subframe with the first coding format characterized by the first sampling frequency of a group of pulse positions [[(p_s)]] in a subframe with the second coding format characterized by the second sampling frequency, each group including a number of positions that is a function of the ratio ~~(F_s/F_e)~~ between the second sampling frequency and the first sampling frequency.

Claim 18 (currently amended): A method according to claim 11, wherein the first and second subframe durations are different,
and ~~characterized in that it~~ wherein the method includes the steps of:
a20) defining an origin [[(O)]] common to the subframes of the first and second formats;
a21) dividing successive subframes of the first coding format characterized by a first subframe duration to form pseudosubframes of duration corresponding to the subframe duration of the second format;
a22) updating said common origin; and
a23) determining the correspondence between the pulse positions in the pseudosubframes and in the subframes with the second format.

Claim 19 (currently amended): A method according to claim 18, ~~characterized in that~~ wherein it also discriminates the ~~follow~~ following situations:

· the first and second durations are fixed in time; and

· the first and second durations vary in time.

Claim 20 (currently amended): A method according to claim 19, wherein the first and second durations are fixed in time and ~~characterized in that~~ the position in time of said common origin is periodically updated whenever boundaries of respective subframes of first and second duration are aligned in time.

Claim 21 (currently amended): A method according to claim 19, wherein the first and second durations vary in time and ~~characterized in that~~:

a221) respective summations of the durations of subframes with the first format and the durations of subframes with the second format are effected successively;

a222) equality of the two summations is detected, defining a time of updating said common origin; and

a223) said two summations are reset, after said equality is detected, for future detection of a next common origin.

Claim 22 (currently amended): A software product adapted to be stored in a memory of a processor unit, in particular a computer or a mobile terminal, or in a removable memory medium adapted to cooperate with a reader of the processor unit,

the software product including instructions for implementing a method of transcoding between a first compression codec and a second compression codec, said first and second codecs being of pulse type and using multipulse dictionaries in which each pulse has a position marked by an associated index,

said method including the following steps:

a) where appropriate, adapting coding parameters between said first and second codecs;

b) obtaining from the first codec a selected number of pulse positions and respective position indices associated therewith;

c) for each current pulse position of given index, forming a group of pulse positions including at least the current pulse position and the pulse positions with associated indices immediately below and immediately above the given index;

d) selecting as a function of pulse positions accepted by the second codec at least some of the pulse positions in an ensemble constituted by a union of said groups formed in step c); and

e) sending the selected pulse positions to the second codec for coding/decoding from the positions sent;

said selection step d) then involving a number of pulse positions less than the total number of pulse positions in the dictionary of the second codec

~~characterized in that it includes instructions for implementing the transcoding method according to any one of the preceding claims~~.

Claim 23 (currently amended): A system for transcoding between a first compression codec and a second compression codec, said first and second codecs being of the pulse type and using multipulse dictionaries in which each pulse has a position marked by an associated index, said system ~~being characterized in that it includes~~ comprising a memory adapted to store instructions of a software product ~~according to claim 22~~ comprising instructions for carrying our the following steps:

a) where appropriate, adapting coding parameters between said first and second codecs;

b) obtaining from the first codec a selected number of pulse positions and respective position indices associated therewith;

c) for each current pulse position of given index, forming a group of pulse positions including at least the current pulse position and the pulse positions with associated indices immediately below and immediately above the given index;

d) selecting as a function of pulse positions accepted by the second codec at least some of the pulse positions in an ensemble constituted by a union of said groups formed in step c); and

e) sending the selected pulse positions to the second codec for coding/decoding from the positions sent;

said selection step d) then involving a number of pulse positions less than the total number of pulse positions in the dictionary of the second codec.